Small Business Innovation Research/Small Business Tech Transfer

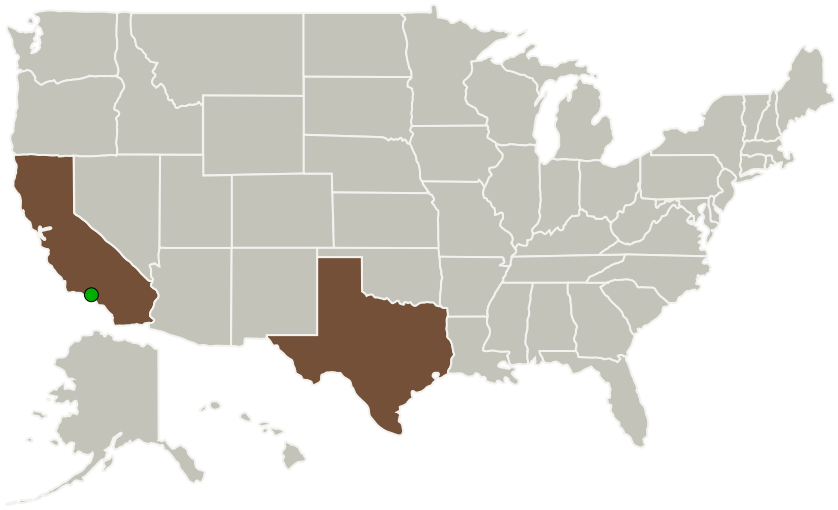
Large Format LW Type-II SLS FPAs for Space Applications, Phase I

Completed Technology Project (2014 - 2014)

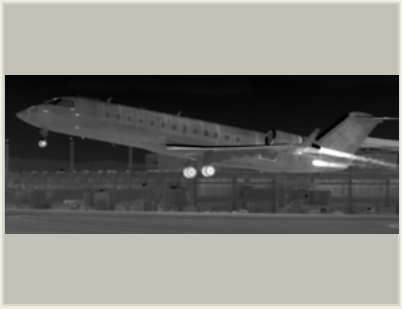
Project Introduction

This Phase I SBIR proposes to develop high performance (low dark current, high quantum efficiency, and low NEdT) infrared epitaxy materials based on Type II Strained Layer Superlattice (SLS) for large format space-based sensor applications. The epi materials will be grown with Sb-capable multi-wafer production Molecular Beam Epitaxy (MBE) reactor at IntelliEPI-IR. The initial goal includes achieving QE of at least 30% with LWIR spectral wavelength band near 12 µm. The SLS detector design will be done in collaboration with Dr. Sarath Gunapla's infrared device group at JPL to ensure that the effort addresses NASA needs. Successful device architecture shorter wavlengths will be evolved to longer wave large-format application. If successful, a Focal Plane Array may be fabricated during Phase II.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
IntelliEPI IR, Inc.	Lead Organization	Industry	Richardson, Texas
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California



Large Format LW Type-II SLS FPAs for Space Applications Project Image

Table of Contents

Large Format LW Type-II SLS FPAs for Space Applications, Phase I

Completed Technology Project (2014 - 2014)

Primary U.S. Work Locations	
California	Texas

Project Transitions

June 2014: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140573)*

Images

Project Image
Large Format LW Type-II SLS FPAs for Space Applications Project Image
(https://techport.nasa.gov/image/136617)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
IntelliEPI IR, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

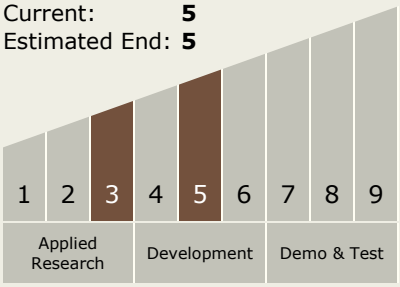
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Paul R Pinsukanjana

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Large Format LW Type-II SLS FPAs for Space Applications, Phase I

Completed Technology Project (2014 - 2014)

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System